Geocomp
CORPORATION

January 19, 2007

Sitec Environmental Inc.
769 Plain Street Suit Unit C
Marshfield, MA 02050

Attention: Mr. Mike Quatromoni

Subject: Crow Lane Landfill Corrective Action Design - Perimeter Berm
Newburyport, Massachusetts

Gentlemen;

We have reviewed the Corrective Action Design for the Crow Land Landfill prepared by your office dated 01/05/07. We are satisfied that our recommendations for the perimeter berm design have been incorporated.

Our recommendations were presented in a letter dated 01/05/07. The recommendations are:

1. Berm slopes should be no greater that 1.5H:1V
2. Where slopes of 1.5H:1V are not feasible and the berm height is less than 20 feet, slopes should be buttressed using boulder size rip-rap.
3. To complete the berms on the westerly side of the landfill, we recommended a combination of 1.5H:1V slopes and Mechanically Stabilized Earth (MSE) berms.

The 01/05/07 letter presented a preliminary stability analysis for a critical section. The analysis demonstrated that the recommendations provide an acceptable factor or safety for global and bearing capacity factor of safety. We have performed a Direct Shear Test (attached) on the soils used for the construction of the perimeter. The friction angle of 43 degrees measured is consitent with that used in the analysis.

We understand we are to provide final design for the perimeter berms using the measured soil strength, and the Corrective Action Design geometry shown in the drawing. This design will present additonal length and spacing details for MSE reinforcing, and wall facing details that will supplement the Corrective Action Design drawings. We also understand that we are to provide Quality Control/ Quality Assurance procedures for the construction of the MSE portion of the berm.

Sincerely yours,
GEOCOMP CORPORATION

Martin Hawkes, P.E.
Project Engineer

Attachments: Strength Test Results on Berm Soils.

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Client:	Geocomp Consulting		
Project Name:	Crow Lane Landfill		
Project Location:	Newburyport, MA		
GTX #:	7199		
Start Date:	01/13/07	Tested By:	rmt
End Date:	01/15/07	Checked By:	jdt
Soil ID:	P1-6 & P1-9 Composite		
Soil Description:	Moist, very dark gray gravel with silt and sand		

Direct Shear Test Series by ASTM D 3080

Soil Preparation: Compacted using moderate effort at a visually moist moisture content

Compaction Characteristics:
- Corrected Maximum Dry Density --- pcf
- Corrected Optimum Moisture Content --- %
- Compaction Test Method ASTM D 1557

Test Equipment: Top box = 12 in x 12 in; Bottom box = 16 in x 12 in; Load cells and LVDTs connected to data acquisition system for shear force, normal load and horizontal displacement readings; Flat plate clamping device; surface area = 144 in^2

Horizontal Displacement, in/min: 0.04 Soil Height, in: 6 Test Condition: inundated

Parameter	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Initial Moisture Content, %	13	13	13	---	---	---
Initial Dry Density, pcf	103	103	103	---	---	---
Percent Compaction, %	---	---	---	---	---	---
Normal Compressive Stress, psi	10	20	40	---	---	---
Peak Shear Stress, psi	7	16	37	---	---	---
Post Peak Shear Stress, psi	---	---	---	---	---	---
Final Moisture Content, %	18	16	15	---	---	---

NOTES:

Peak Friction Angle:	**43**	**degrees**
Peak Cohesion:	**0**	**psi**
Post Peak Friction Angle:	**---**	**degrees**
Post Peak Cohesion:	**---**	**psi**

Figure a. Shear Force vs. Horizontal Displacement

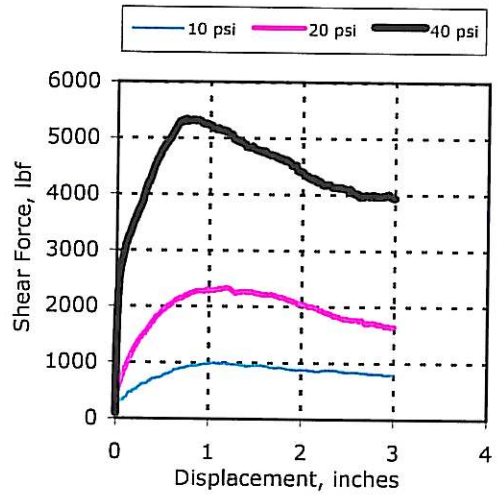

Figure b. Shear Stress vs. Normal Stress